ROCKY MOUNTAIN ELK:

CURRENT POPULATION STATUS
AND
HABITAT SUITABILITY
IN THE
SKAGIT RIVER WATERSHED

BY

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FOR

MINISTRY OF ENVIRONMENT

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1.0 INTRODUCTION

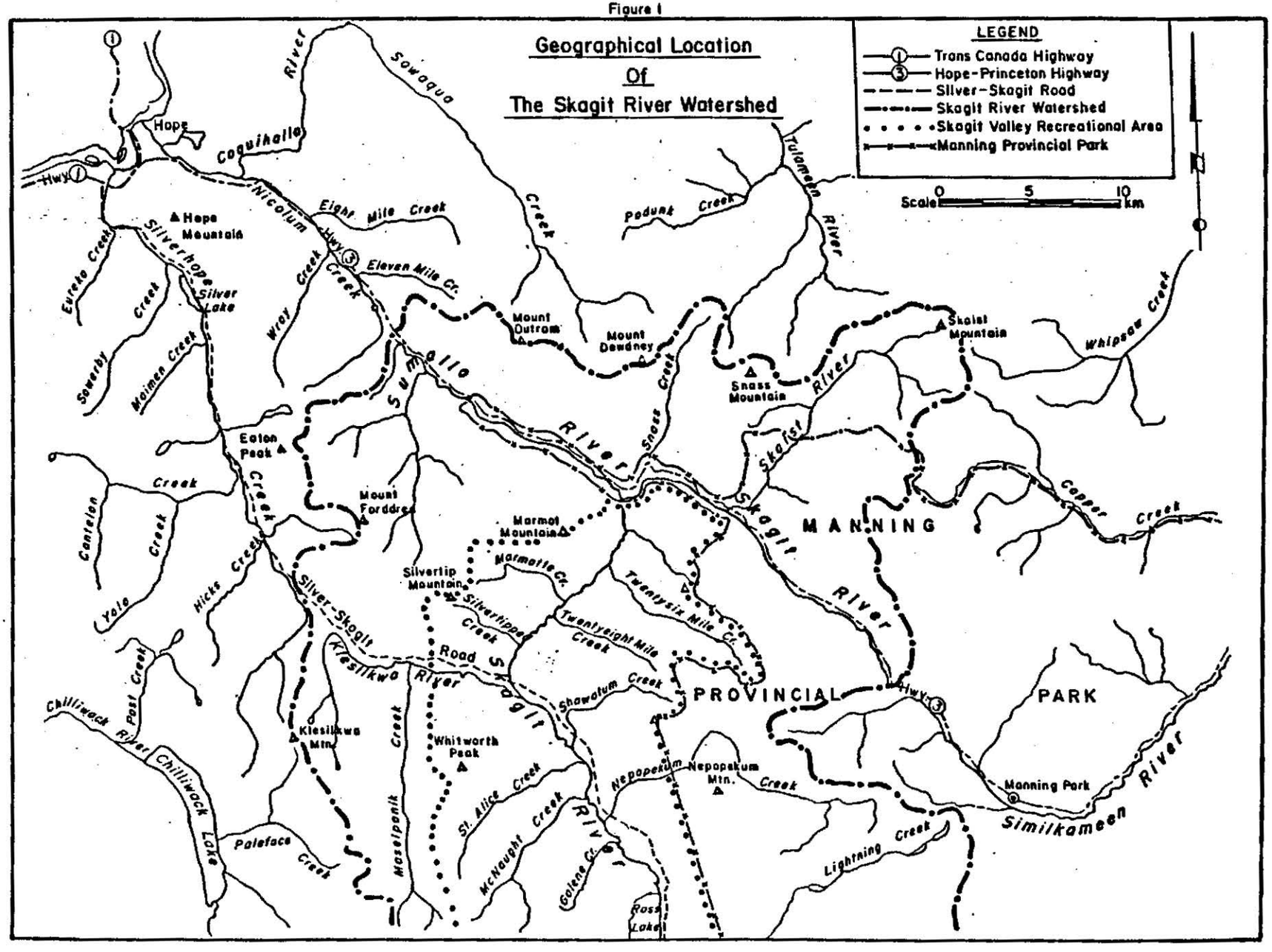
As the result of a study proposal submitted to the Skagit Environmental Endowment Commission in January, 1986 the Fish and Wildlife Branch subsequently received funding to update the data base for certain wildlife species in the Skagit River watershed (Barnard, 1986). Among the studies approved was a proposal to document the extent of existing elk (Cervus elaphus) utilization of the study area and to assess the suitability of the watershed as elk habitat. The need to acquire these data was prompted by recent periodic but persistent sightings of elk although no established herds were known to exist within the watershed. Elk possess considerable recreational potential for both the hunting and non-hunting public. They are also amenable to a variety of management and habitat enhancement techniques. However, before these possibilities can be fully explored it is first necessary to determine the current level of elk presence in the watershed and the suitability of the habitat to support these and, potentially, additional animals.

2.0 STUDY AREA DESCRIPTION

Located in southwestern British Columbia, the Canadian portion of the Skagit River watershed encompasses an area of approximately 1036 km^2 (Whately, 1979)(Fig. 1). Physiographically, the area includes a wide variety of habitats ranging from alpine meadows to broad river valleys. This diversity is reflected in the six biogeoclimatic zones that occur within the watershed: 1) Alpine Tundra and Mountain Hemlock 2) Alpine Tundra and Englemann Spruce-Subalpine Fir 3)Mountain Hemlock (4) Englemann Spruce-Subalpine Fir 5) Coastal Western Hemlock and 6) Interior Douglas Fir (Barnard, 1986). The latter zone occurs primarily in the Lower Skagit Valley and, in conjunction with the adjacent more coastal zones, creates an ecotone between coast and interior forest types (Perry, 1981). This results in a diverse floral and faunal component that in many respects is unique to the Lower Mainland region.

A variety of land uses have occurred within the watershed, the bulk of which have been of a resource extraction nature. These have included ranching, mining and logging with only the latter two still active today. In the late 1930's and early 1940's construction and subsequent modification of the Ross Dam approximately 48 km below the International Boundary resulted in the creation of Ross Lake Reservoir. At full pool the reservoir inundates approximately 200 ha of the Lower Skagit Valley (Slaney, 1973). Between 1946 and 1954 most of the valley floor

Figure 1


Geographical Location
Of
The Skagit River Watershed
LEGEND
Trans Canada Highway
Hope-Princeton Highway
Silver-Skagit Road
Skagit River Watershed
Skagit Valley Recreational Area
Manning Provincial Park
Scale 0 5 10 km
N
Hope
Coquihalla River
Sowaqua Creek
Tulameen River
Hwy 1
Hwy 3
Nicolum
Eight Mile Creek
Pedunk Creek
Hope Mountain
Silverhope Creek
Eureka Creek
Sowerby Creek
Maimen Creek
Silver Lake
Wray Creek
Eleven Mile Cr.
Mount Outram
Mount Dewdney
Snass Creek
Snass Mountain
Skaist Mountain
Whipsaw Creek
Skaist River
Sumallo River
Eaton Peak
Canteen Creek
Yale Creek
Hicks Creek
Mount Forddree
Marmot Mountain
Marmot Cr.
Silvertip Mountain
Silverhope Creek
Twentyeight Mile Creek
Twentysix Mile Cr.
Skagit River
MANNING
Copper Creek
Silver-Skagit Road
Klesilkwa River
Shawatum Creek
PROVINCIAL
PARK
Chilliwack River
Post Creek
Klesilkwa Mtn.
Whitworth Peak
Chilliwack Lake
Paleface Creek
Maselpanik Creek
St. Alice Creek
McNaught Creek
Nepopekum Mtn.
Nepopekum Creek
Manning Park
Similkameen River
Lightning Creek
Golden Cr.
Ross Lake

was clear-cut or selectively logged and has been followed by a climate-induced period of slow regeneration. Today, forest harvesting is the predominant form of land use, occurring primarily in the Maselpanik, Klesilkwa, Cantelon-Yola and Sumallo drainages. Logging activities are expected to continue as the major land use in the approximately one-third of the watershed that is designated as provincial forest. However, future logging within the 32781 ha Skagit Valley Recreational Area, which is administered by the Parks Branch, will only be permitted if compatible with other resource uses. No logging is permitted in that portion of the watershed within Manning Provincial Park.

Administratively, the study area is located in Resource Management Region 2. Within that region the watershed occupies approximately the southern half of wildlife management unit (M.U.) 2-2.

3.0 METHODS

3.1 Current Population Status

The basis for assessing the extent of current elk population status was the collation of all existing reported sightings and the solicitation of additional sightings. Wherever possible the individual reporting each sighting was interviewed to determine report reliability. The criteria used to determine reliability were subjective, and depended primarily on the writer's assessment of the individual's overall familiarity with local wildlife in general and elk in particular. Degree of reliability was assigned on the basis of three categories: 1) confirmed 2) probable and 3) unknown. Due to passage of time and/or difficulty in tracing the observer, some reported sightings could not be followed up.

Existing sightings were largely retrieved from Wildlife Management Section data on file at the Ministry of Environment regional office. Additional sightings were actively solicited via phone interviews, personal interviews and letter (Appendix 1). Potential sources contacted included individuals (hunters, trappers, fishermen), organizations (rod and gun clubs; naturalist club) and various government agencies (Appendix 2).

3.2 Habitat Suitability

The initial assessment consisted of reviewing documentation of Rocky Mountain elk (Cervus elaphus nelsoni) habitat requirements in ecosystems similar to that present in the Skagit drainage. Source material included unpublished reports on file

at the Ministry of Environment regional office and appropriate resource publications. A general inspection of the study area was then conducted utilizing a 206-B Jet Ranger Helicopter. Each major drainage within the watershed was assessed as to its present capability to support elk and areas of critical importance i.e. winter range, documented.

A field inspection of existing elk habitat in the Nooksack River drainage of north-western Washington was then undertaken with Washington State Game Department personnel. This permitted a visual comparison to be made between the largely unoccupied habitat of the study area and that of a similar ecosystem that is currently occupied by a viable elk herd.

These data were then analysed and an estimate of the number of elk the watershed could support formulated.

4.0 RESULTS AND DISCUSSION

4.1 Current Population Status

A total of 12 elk sightings within the Skagit watershed have been documented for the period 1965-86 (Table 1). In addition 12 reports of elk observations in areas adjacent to the study area have also been documented for the same period (Table 2). The location of each of these sightings is indicated on Figure 2. Of those sightings occurring within the study area eight were considered confirmed or probably accurate. The remaining four were assigned an unknown reliability status. The number of elk observed for a given sighting ranged from a group of eight to single animals. Two sightings each were reported from the Snass and Sumallo drainages respectively. One sighting was reported from just north of Ross Lake and two have occurred at unspecified locations within the Skagit Valley. The remaining five sightings were concentrated within the Klesilkwa and Maselpanik drainages.

The origin of the elk sighted in the study area is unknown. Established herds of Rocky Mountain elk are located in the Tulameen River drainage immediately north of the study area and in the South and Middle Fork Nooksack River drainages to the south (Fig. 2). Since the mid-70's the Tulameen herd has apparently been expanding its range into the Paradise Valley area immediately north of the Snass Creek headwaters (Chestnut - personal communication). Prior to 1980 this was a gradual process; however since then increased utilization of Paradise Valley has been much more noticeable. This is reflected in both the number of elk observed and the presence of tracks, pellet

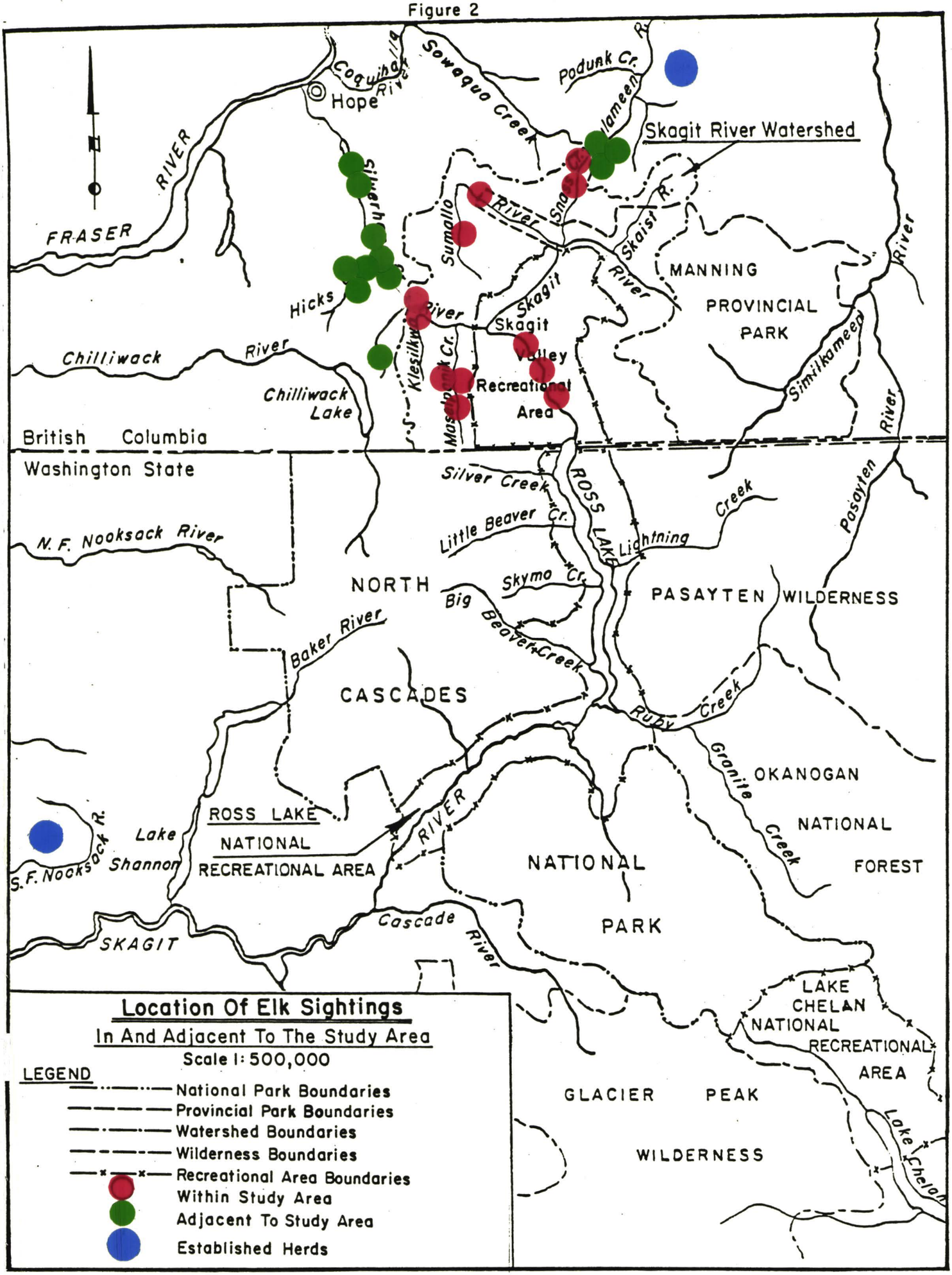
TABLE 1. ELK SIGHTINGS IN THE SKAGIT RIVER WATERSHED - 1965-86.

Date	Location	Details	Observer	Reliability Status
1965	approx. Km 32 - Silver-Skagit Rd.	12-16 animals - Klesilkwa drainage.	N. Lohin	unknown
1967	Sumallo drainage	bull shot near west end of Manning Park.	unknown	unknown
June 3, 1981	approx. Km 50 - Silver-Skagit Rd.	2 cows crossed road.	C. Fairchild	probable
Oct., 1983	Maselpanik drainage	2 cows plus 1 calf - left-hand side going up.	Larry Unger	probable
Fall, 1983	Skagit Valley	bull, cow and calf.	unknown	unknown
Aug., 1984	Maselpanik drainage	1 cow	Frank Rosenhauer	probable
July 3, 1985	Silverhope Creek drainage	large bull, small bull, cow and calf - Km 31 - Silver-Skagit Road.	unknown	probable
Fall, 1985	Snass-Tulameen divide	2 groups of 8 and 6 - all cows.	C. Chestnut	confirmed
Fall, 1985	Maselpanik drainage	group of 5 elk - cows and calves.	Larry Unger	probable
Fall, 1985	Skagit Valley	1 bull	Frank Ullman	probable
Fall, 1985	Sumallo drainage	1 bull, 4 cows, calves	Frank Ullman	unknown
July, 1986	Snass drainage	2 pair plus single - all cows	C. Chestnut	confirmed

TABLE 2. ELK SIGHTINGS IN DRAINAGES IMMEDIATELY ADJACENT TO THE SKAGIT RIVER WATERSHED - 1980-86.

Date	Location	Details	Observer	Reliability Status
Aug., 1980	Tulameen River drainage	Total of 14 elk immed. north of Snass-Tulameen divide.	C. Chestnut	confirmed
June 2, 1982	Silverhope Creek drainage	1 cow elk - Km 26 - Silver-Skagit Road.	P. Smith	probable
Dec. 1, 1983	Silverhope Creek drainage	2 elk	unknown	unknown
Jan. 19, 1984	Silverhope Creek drainage	2 cows - just above Silver Lake	B. Clarke	confirmed
Fall, 1984	Tulameen River drainage	2 groups of 20 and 16 immed. north of Snass-Tulameen divide.	C. Chestnut	confirmed
Fall, 1984	Klesilkwa River drainage	3 adults and 1 calf.	unknown	unknown
Winter, 1984	Hicks Creek area	cow and calf.	B.C.F.S. personnel	unknown
March, 1985	Silverhope Creek drainage	large bull in upper portion of drainage.	Larry Unger	probable
Nov., 1985	Silverhope Creek drainage	large bull on road - Km 18 Silver-Skagit Road.	Larry Unger	probable
Winter, 1985	Hicks Creek area	cow and calf	B.C.F.S. personnel	unknown
April, 1986	Hicks Creek area	group of 9 plus cow and calf-report to Chilliwack Dist. office.	unknown	unknown
July, 1986	Tulameen River drainage	total of 14 elk - 1 spike, 8 cows, 5 calves, north of Snass-Tulameen Divide.	C. Chestnut	confirmed

Figure 2


Hope
Coquihalla River
Sowaqua Creek
Podunk Cr.
Ilameen R.
Skagit River Watershed
FRASER RIVER
Silverhope
Sumallo River
Snass R.
Skaist R.
MANNING PROVINCIAL PARK
Similkameen River
Hicks
Klesilkwa River
Skagit Valley Recreational Area
Chilliwack River
Chilliwack Lake
British Columbia
Washington State
Silver Creek
Little Beaver Cr.
ROSS LAKE
Lightning Creek
Pasayten River
N.F. Nooksack River
NORTH CASCADES
Skymo Cr.
Big Beaver Creek
PASAYTEN WILDERNESS
Baker River
Ruby Creek
Granite Creek
OKANOGAN NATIONAL FOREST
ROSS LAKE NATIONAL RECREATIONAL AREA
Lake Shannon
S.F. Nooksack R.
SKAGIT RIVER
NATIONAL PARK
Cascade River
LAKE CHELAN NATIONAL RECREATIONAL AREA
GLACIER PEAK WILDERNESS
Lake Chelan
Location Of Elk Sightings
In And Adjacent To The Study Area
Scale 1: 500,000
LEGEND
National Park Boundaries
Provincial Park Boundaries
Watershed Boundaries
Wilderness Boundaries
Recreational Area Boundaries
Within Study Area
Adjacent To Study Area
Established Herds

groups and evidence of foraging. In 1985 and 1986 small groups of elk had crossed the divide between the two watersheds and were observed utilizing summer range in the headwaters of Snass Creek. During the same period elk tracks have been observed half-way down the drainage. The confluence of Snass Creek and the Skagit River is immediately north of the Upper Skagit Valley (Fig. 2). Although such a route would necessitate crossing Hwy. 3 it is not inconceivable that wanderers from the main herd could utilize this natural travel corridor.

The Nooksack herd in northwest Washington originated from a transplant of 23 animals in 1946 (Bjorklund, 1981). Today the herd is estimated to contain approximately 1800 animals (Davison - personal communication). Although various climatological and physical barriers tend to contain significant northward expansion of the herd increasing frequency of elk sightings in the Chilliwack Valley in recent years suggests some emigration has probably occurred (Pimlott, 1986). Some of these animals are now believed to be resident to that area. Both the Maselpanik and Klesilkwa drainages in the study area and the nearby Hicks and Silverhope drainages have their headwaters immediately adjacent to the Chilliwack drainage (Fig. 2). As such, they would serve as natural travel corridors. This may account, in part, for the relatively large number of elk sightings that have occurred in, and adjacent to, that portion of the Skagit watershed (Tables 1 and 2).

Suitable winter range for elk in the watershed is currently limited (Sec. 4.2). No sightings of elk utilizing known winter range in the study area have been reported. Several winter sightings in the Hicks Creek area adjacent to the western boundary of the study area would suggest some animals may have attempted to establish residence. However, given the deep snow conditions thought to exist in that area in most years their survival is questionable. Fate of the elk sighted in the study area is unknown. Transitory animals, such as these appear to be, often suffer high mortality due to unfamiliarity with the new areas into which they have wandered (Fuhr - personal communication).

Given its location between areas containing expanding elk herds, and the interconnecting natural north-south corridors that link these to the study area, periodic sightings of elk in the Skagit watershed are not surprising. Recent sightings of elk in the Lower Skagit Valley during the early 1970's led to predictions that they would eventually become established there (Gates, 1974). During the same period expansion of elk into the Ross Lake Basin immediately south of the study area was noted

(Taber et al, 1972). This also led to predictions of elk one day becoming established in the area if such expansion continued. The available data does not indicate that elk are currently established within the Skagit watershed. This could, however, change in the near future. As discussed earlier, the Tulameen herd is expanding into new territory and, if this continues, could result in increasing numbers of elk wandering into the Skagit watershed (Chestnut - personal communication). Due to recent changes in age-class harvesting the Nooksack herd is experiencing increased productivity (Davison - personal communication). Subsequent changes in herd social structure could result in larger numbers of animals, particularly young bulls, being forced to expand into new territory. As the current management strategy for the Nooksack herd is to prevent further southward expansion, a north-easterly flow of displaced animals is a distinct possibility. (Davison - personal communication).

4.2 Habitat Suitability

In the following discussion critical winter range is defined as that area which remains available to ungulates during winter weather extremes and is therefore necessary for their survival.

4.2.1 Unit 1 - Klesilkwa River - Maselpanik Creek

4.2.1.1 Winter Range

The critical winter habitat is situated between the Klesilkwa Valley floor and approximately the 1067 m level along the south-facing lower slope of Silvertip Mtn.(Fig. 3). Here a combination of aspect, wind and topography should result in a reduced accumulated snow pack relative to that occurring on the valley floor. The primarily Douglas fir (Pseudotsuga menziesii) overstory is present in a variety of age classes. These provide an adequate source of both thermal and protective cover. Foraging opportunities for elk are currently limited to the grass and forb communities associated with rock outcrops and other natural openings and understory browse species.

Although many characteristics of fair to good winter habitat exist on that portion of the Klesilkwa valley floor adjacent to the Silver-Skagit Road its value is negated by deep winter snow conditions (Slaney, 1973)

4.2.1.2 Spring and Fall Range

Normally those portions of the two drainages between approximately 762 m and 1158-1216 m would provide the transition range between the winter range and the higher elevation summer range. However, in both drainages logging activities have effectively "gutted" their mid-elevational slopes via tree removal. Forage is plentiful in the clear-cuts, but they are too far from protective and thermal cover to support use by resident elk. Transitory elk unfamiliar with the area apparently do pass through the area based on sighting records (Sec.4.1). However, to animals seeking to establish a new range the area would not be attractive (Davison - personal communication). Occasional isolated clumps of cover along the respective watercourses do remain; however they are either too small and/or too close to the adjacent road to serve as functional cover. Fertilization of narrow strips between clear-cuts and adjacent roads on Washington elk ranges to provide visual screens has resulted in spectacular growth. However, to use such a technique to provide protective and thermal cover corridors in a situation such as occurs here would be prohibitively expensive (Davison - personal communication). Useable cover may re-establish in 20-30 years, but succession would greatly reduce available forage in the process.

4.2.1.3 Summer Range

At approximately 1158-1216 m the meadow-tree mosaic indicative of good summer range becomes apparent and extends well into the headwaters of both drainages.

4.2.1.4 Summary

In its present state the unit could not support a resident elk herd due to a lack of secure spring and fall range. Were such habitat to exist the available winter range would limit the herd size to 20-30 animals. Due to its location adjacent to Unit 2 this winter range would probably be occupied by elk resident to that unit.

4.2.2 Unit 2 - Lower Skagit Valley

4.2.2.1 Winter Range

The bulk of the critical winter range in both this unit and the entire watershed is located between the 610 and 1067 m contours on the east side of the valley (Fig. 3). This area has a predominately south-west aspect. Due to the maximized solar radiation, snow accumulation is likely to be much reduced from

that occurring on the valley floor. Wind action in conjunction with topography will also contribute to reducing the snowpack. Initially, the relief of the valley side is relatively gradual, particularly between Nepopekum Creek and the International Boundary. This creates a more rolling topography, the appearance of which is accentuated by several large knolls. Above this the relief becomes sharper and the slope is occasionally punctuated by rock outcroppings.

Small to medium-sized stands of old growth, primarily Douglas fir, are interspersed throughout a variety of lower age class coniferous cover. Crown closure between stands varies but is adequate overall to provide the thermal cover required. Foraging opportunities are primarily associated with rock outcrops and other natural openings (Slaney, 1973). In addition to the preferred grasses and forbs, various shrub species such as ocean spray (Holodiscus discolor) and vine maple (Acer circinatum) provide browsing opportunity should snow limit grazing activities. Availability of forage is the factor limiting the current winter range capabilities of the site.

The valley floor is up to 1.6 km wide and drops to an elevation of 480 m at Ross Lake (Slaney, 1973). This extensive area consists of a mosaic of habitats including coniferous and deciduous stands, natural meadows and openings, beaver ponds and riparian habitat (Fig. 4). Coniferous tree stands consist of a variety of age and canopy cover classes providing both thermal and protective cover. Foraging opportunities are primarily associated with the openings, but are supplemented by understory forage in the deciduous tree stands. Snow depths permitting, the valley floor would have capability to provide good quality winter range (Davison - personal communication).

However, in some years accumulated snow depths on the valley floor can range from 60 cm to 120 cm depending on location (Slaney, 1973). Depths greater than about 76 cm seriously curtail the movement of elk (Skovlin, 1982). Snow depths of less than 46 cm do not often cause elk to move elsewhere; depths greater than 46 cm frequently produce elk movement to areas of less snow. Therefore, it is likely that elk would utilize the valley floor as winter range until snow depth forced them to the adjacent range on the east side of the valley. The frequency of years that movement to the higher elevation would be necessary is unknown.

The west side of the valley is comprised of the St. Alice, McNaught and Galene Creek drainages. The three valleys are narrow and steep-sided, although McNaught tends to widen out at

approximately the 1158 m elevation. All three drainages are presently unlogged. Each drainage provides a small amount of winter habitat adjacent to the Skagit valley floor.

4.2.2.2 Spring and Fall Range

This mid-elevational habitat on both sides of the valley is intact and provides an abundance of transition cover to link the winter and summer ranges. The habitat component most limiting on these ranges in their current state is availability of open areas for foraging.

4.2.2.3 Summer Range

This habitat zone is extensive on both sides of the valley and is not limiting to elk presence in the unit. On the east side of the valley this habitat is primarily located in Manning Provincial Park. As a result, it is secure from alienation by most competing land uses.

4.2.2.4 Summary

Availability of winter range is the factor limiting the number of elk this unit could support. Spring and fall ranges are adequate, but would have an increased capability if more forage area were available. Summer range is not limiting. Assuming that elk were restricted to the critical winter range described in Sec. 4.2.2.1 it is estimated the unit could support 60-80 animals. As Unit 1 cannot support a resident herd, an additional 20-30 animals from Unit 2 could occupy the winter range described in Sec. 4.2.1.1.

4.2.3 Unit 3 - Upper Skagit Valley

4.2.3.1 Winter Range

This area has a narrow valley floor that is essentially occupied by the river channel. The valley sides have northwest and southeast aspects respectively. These two characteristics result in essentially no winter range existing in this unit.

4.2.3.2 Spring and Fall Range

Transition habitat leading to the higher elevation summer range is adequate on both sides of the valley.

4.2.3.3 Summer Range

Pockets of summer range, primarily in the headwaters of the major side-drainages e.g. Marmotte Creek, Twentysix Mile Creek, is adequate to support elk.

4.2.3.4 Summary

Although spring, fall and summer range is available, the unit could not support a resident elk herd due to lack of a winter range.

4.2.4 Unit 4 - Skaist River Drainage

4.2.4.1 Winter Range

No suitable winter range exists within this unit.

4.2.4.2 Spring and Fall Range

The drainage is characterized by a moderately long valley with fairly steep sides. It is unlogged, but tree growth does not appear vigorous and the canopy is relatively open. The valley floor widens in places, particularly at the Grainger Creek confluence, but provides little in the way of good elk foraging opportunities overall.

4.2.4.3 Summer Range

Adequate summer range exists in the head waters of the Skaist River and Grainger Creek.

4.2.4.4 Summary

The unit could not support a resident elk herd due to lack of winter range. Spring and fall habitat is borderline at best. Summer range is suitable and may presently be utilized by elk resident to the adjacent Tulameen River drainage.

4.2.5 Unit 5 - Snass Creek Drainage

4.2.5.1 Winter Range

No suitable winter range exists within this unit.

4.2.5.2 Spring and Fall Range

Although tree cover is adequate to provide thermal and protective cover the foraging opportunities are somewhat limited by the narrowness of the valley floor. A functional transition zone exists but would support a limited number of elk.

4.2.5.3 Summer Range

Some summer range is available in the upper reaches of the drainage adjacent to the divide between the Skagit and Tulameen watersheds.

4.2.5.4 Summary

This unit is of interest because of recent elk sightings in the headwaters of Snass Creek (Sec. 4.1). However, lack of a winter range precludes the unit harbouring a resident elk herd. Range expansion by the Tulameen herd will continue to result in some animals utilizing the headwaters of the Snass as summer range.

4.2.6 Unit 6 - Sumallo River Drainage

4.2.6.1 Winter Range

A wet meadow complex at Tashme, in conjunction with protective and thermal cover on the adjacent slopes, may have at one time been capable of supporting a small resident elk herd. However, the present-day level of disturbance associated with the adjacent highway and housing development negates any such use today.

4.2.6.2 Spring and Fall Range

The mid-elevation levels have been extensively logged and portions are well travelled by recreationists. No viable protective or thermal cover remains to provide the spring and fall habitat required by a resident elk herd.

4.2.6.3 Summer Range

Adequate pockets of summer range are present at higher elevations.

4.2.6.4 Summary

This unit could not support a resident elk herd due to a lack of adequate winter, spring and fall range.

4.3 Snow Pack Data Availability

In both units 1 and 2 it was stated that although suitable winter range habitat existed on the valley floors, snow depth precluded annual use of this habitat. Therefore, these areas were not included when estimating the numbers of elk each unit was capable of wintering. However, it is important to note that only one source of snowpack data was located for the areas in question. This, in turn, was restricted to one sample period during the winter of 1970-71 (Slaney, 1973). Slaney subsequently noted that "...incomplete records..." from 1970-71 indicate that snowfall was approximately 40 percent higher than the average for this period. He then observes that the 1971-72 snowfall appeared to be similar to that of the previous winter.

Given what appears to be a degree of uncertainty about some of these observations, it may be advisable to undertake further investigation of snowfall patterns over time in these areas. If such data indicates portions of the valley floors do not receive annual snowfall in excess of what elk are able to handle, then the winter range capability of each unit could be adjusted accordingly.

4.4 Competition with Deer

Mule deer (Odocoileus hemionus hemionus), Columbia blacktail (Odocoileus hemionus columbianus) and intergrades between these two races are present within the Skagit watershed (Gates, 1974). The areas delineated as critical winter range for elk in Units 1 and 2 overlaps that previously identified for deer (Slaney, 1973). Both deer and elk are opportunistic feeders (Skovlin, 1982). However, in some areas, mule deer have been shown to be not as adaptable as elk (Hansen and Reid, 1975; Mackie, 1976). Case histories have been reported showing that elk populations increase as mule deer populations decrease where the two species' winter range overlaps (Cliff, 1939; Murie, 1951). Slaney (1973) stated that if elk became common residents of the Lower Skagit Valley they would compete directly with deer for space and food and thereby reduce the deer population. Washington State Dept. of Game personnel familiar with elk-deer interactions have indicated that elk utilizing the available winter ranges in Units 1 and 2 would outcompete the deer, ultimately reducing their numbers (Davison - personal communication).

Therefore, any management decision to establish a resident elk herd that would utilize the same winter range currently used by deer should be carefully weighed in light of the aforementioned observations.

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APPENDIX 1 LETTER SENT TO SELECTED ORGANIZATIONS AND GOVERNMENT AGENCIES SOLICITING SIGHTINGS OF ELK - SKAGIT RIVER WATERSHED, 1986.

July 2, 1986

Dear .....:

The Fish and Wildlife Branch, Region II, are currently attempting to develop a preliminary data base for certain wildlife species in the Skagit River watershed - see attached map. The species of interest are Rocky Mountain elk, cougar, grizzly and wolf. I have been contracted by the Branch to assemble as much sighting data as may be available on these species. It would greatly assist me if you could alert those members of your organization who are frequently in the Skagit watershed as to our interest in obtaining any sightings, or reports of sightings, of these species. Although we anticipate most of these would be 1986 sightings, those from other years would be a welcome addition. As the final report is due August 31, 1986, I would require any sighting information no later than August 15, 1986.

Basically, we could certainly use the following data, by species, for each sighting:

- date
- location (as specific as possible)
- number of animals
- sex and age where apparent (eg. sow with 2 cubs; cow with calf; 1 bull; etc.)

Should any of your members be aware of other possible contacts re sightings of the aforementioned species, who either work, live or recreate in the Skagit watershed, I would certainly appreciate their name and phone number or address.

I look forward to your assistance with this important project. I can be contacted at the address and/or phone number below. Thank you for your cooperation.

Yours sincerely,

Tony Barnard
12411 60th Avenue
Surrey, B. C. V3W 1P6

Phone: (604) 594-6752

APPENDIX 2 INDIVIDUALS, ORGANIZATIONS AND GOVERNMENT AGENCIES CONTACTED TO OBTAIN SIGHTINGS OF ELK - SKAGIT RIVER WATERSHED, 1986.

Individuals

Jack DeLair - trapper, logger and former Conservation Officer, Floods
Larry Unger - woods foreman, G. and F. Logging Ltd., Silver Creek
Harold Trottier - trapper, Silver Creek
Brian Fuhr - biologist, Ministry of Environment, Victoria
John Gustafson - trapper and logger, Maple Ridge
Dan Chervenka - trapper, Creston
Al Koop - trapper and logger, Hope
Heinz Schiefermier - trapper, Hope
Kay Keding - Conservation Officer, Chilliwack
Chuck Chestnut - Hunter, North Vancouver
Henry Stephens - cougar hunter, Langley
Ernie Buckle - cougar hunter, Maple Ridge
Ted Horsting - cougar hunter, Deroche
Frank Rosenhauer - hunter, Chilliwack
Ron Gellner - contract fisheries technician, Maple Ridge

Organizations

Chilliwack Fish and Game Protective Association
Hope Rod and Gun Club
Chilliwack Field Naturalists Club
Valley Helicopters Ltd.

Government Agencies

Ministry of Forests - Rosedale
U.S. National Parks Service
Ministry of Lands, Parks and Housing
Provincial Museum

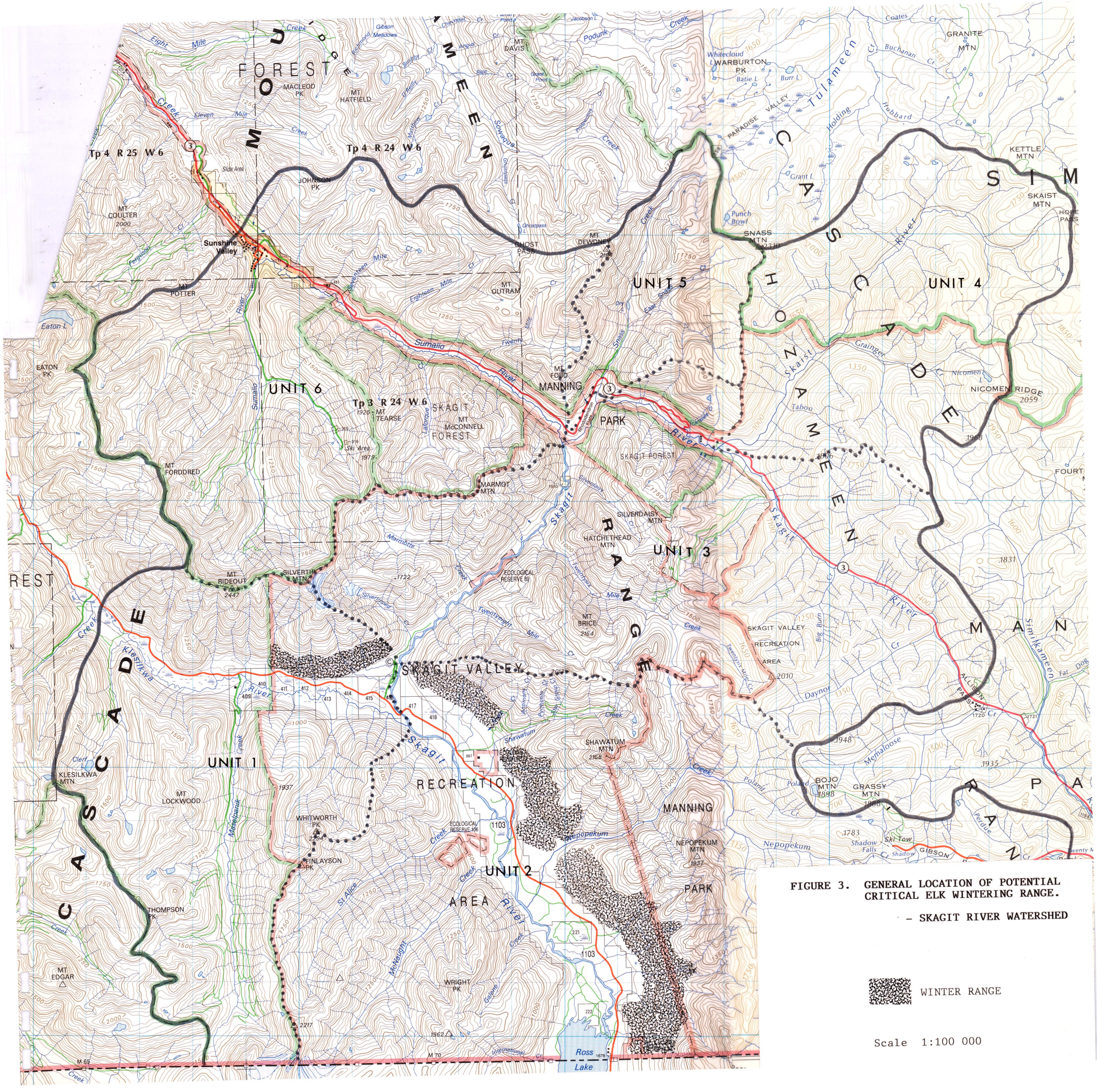

FIGURE 3. GENERAL LOCATION OF POTENTIAL CRITICAL ELK WINTERING RANGE.

– SKAGIT RIVER WATERSHED

WINTER RANGE

Scale 1:100 000